SUPPLEMENT TO THE PRELIMINARY ENGINEERING REPORT
Quality Control Checklist for Preliminary Engineering Reports

Name of Water/Wastewater Facility

Name of Engineering Firm

Name of Purveyor (Owner or System Contact)

Name of PE on PER Documents

Mailing Address

Mailing Address

City State Zip

City State Zip

Type of Project (Check all that apply)

- ❑ Booster Pump Stations
- ❑ Sewer Treatment
- ❑ Transmission mains and distribution systems
- ❑ Well Renovation
- ❑ Storage
- ❑ Water Treatment
- ❑ Well Construction
- ❑ Wastewater Collection System
- ❑ Wastewater Treatment/Disposal
- ❑ Other_____
- ❑ Site Visit with Funding Agency Representative, Owner Representative and Consulting Engineer completed. Meeting minutes attached.

CDBG Approval

State Revolving Loan Fund Concurrence

PE Seal

Rural Development Concurrence

Engineers Signature Date

Growth Projections – All Projects

All Preliminary Engineering Reports for Water and Wastewater projects must contain the following:	Completed	N/A	Page Referenced
If growth forecasts exceed 1%, the engineer must consider a multitude of factors that lead to increasing/decreasing population/demand. These factors include economic conditions/outlook for core industries (e.g. mining), regional and shrinkage trends, new building permits, increasing/decreasing school enrollment, etc.			
If growth cannot be forecast with certainty, a phased approach shall be considered for each reasonable alternative.			
Customer commitment to the project must be identified based on the existing population. This section should also identify means that will be utilized to encourage customer/population commitment and participation to the project.			
If there is a proposed change to the district service area, governing law must be fully researched and comments received from County DA/legal counsel, and any costs associated with expansion should be included in the project.			
If there are small water or wastewater systems within the boundaries of the service area, does the PER address how these system will or can be connected, and at what cost? Is consolidation of service area being considered?			
Does the applicant own adequate water rights to support the project?			

Miscellaneous Information – All Projects

All Preliminary Engineering Reports for Water and Wastewater projects must contain the following:	Completed	N/A	Page Referenced
Accessibility – are the applicant's customer service facilities fully accessible and in compliance with the Uniform Federal Accessibility Standards, and the Americans with Disabilities Acts guidelines? If not is the cost to bring in compliance included in the report?			
Include a map indicating ownership of the land impacted by the proposed project.			
Feature Locations – provide the coordinates (Lat/Long,) of major features (tanks, wells, sources, utility headquarters etc.). The preferred format is NAD 83, ddd.ddddd. Note any common format is acceptable, EXCEPT State Plane Coordinates.			
Has the cost been factored in for communities who must hire temporary staff for project administration?			
Provide evidence of the Certified Operator for the systems, copy of operator's Certification from the State of Nevada.			
Provide copy of approved and up-to-date Water Conservation Plan as required by the State of Nevada.			
Provided evidence of effective water metering program (rate structure) – i.e. a community which has meters and charges a flat rate does not have an effective water metering program.			
Does the community have a wellhead protection program in place?			
Does the community have an effective operations programs in place – i.e. – valve turning, meter replacement, cross-connection control etc.			

	Completed	N/A	Page Referenced
Does the community have an updated Emergency Response Plan and Vulnerability Assessment Plan – provide copies of certifications – do not include the actual plans. Communities must update their plans every 3 years.			
Provide copies of the State of Nevada's latest Sanitary Surveys, and NDEP reports on discharge permits and inspections or PUC staff inspection reports and/or commission orders.			

Cost Estimates – All Projects

All Preliminary Engineering Reports for Water and Wastewater projects must contain the following:	**Completed**	**N/A**	**Page Referenced**
Construction estimates must be based on the anticipated mid-point of construction and developed in considerable detail. Major equipment items such as stand-by generators, SCADA systems, etc., must be listed and estimated separately. Facility costs should be based on square footage as depicted in a floor plan sketch. It may be necessary to include an equipment layout on the sketch. Prices (unit and lump sum) should take into consideration procurement methods. Include the basis of unit price costs (means, previous bids in locality, etc.). Does the operation have all necessary equipment to operate the facility, including a computer billing system?			
The scope of all non-construction costs (legal, administrative, interim financing, title companies, land acquisition, bond counsel, etc.) must be defined before costing the item; percentages of construction costs are not acceptable.			
Engineering costs should be based on best practicable engineering practices and costs associated therewith.			
Construction contingencies should not exceed 10%. Detailed written justification must be made for contingencies outside of this range.			
Include the costs of land acquisitions; private, BLM, FS. If there is on-going annual costs associated with this acquisition or lease it should be included in the annual O&M costs.			
Include cost estimate for O&M cost impacts reductions or increases based on system improvements.			
Include cost impacts of other funding (i.e. AB 198 capital replacement)			

Financial Data – All Projects

All Preliminary Engineering Reports for Water and Wastewater projects must contain the following:	**Completed**	**N/A**	**Page Referenced**
Provide applicants 5-10 year capital plan. If a plan is not available how is the applicant addressing long term capital needs?			
Include 3 years of audited financial statements. Combined balance sheets, and statements of revenues, expenditures cannot be used.			
Conversion on water usage must be based on ERU or EDU – users must be broken out into residential vs. commercial – must have a chart of actual usage per category.			
Current rate schedule and any anticipated rate schedule adjustments for all tiers of service. Include connection charges and policy on late payments, discontinuation and restoration of service. Include date and amount of last rate change.			

	Completed	N/A	Page Referenced
All information on all outstanding debt must be included; to whom owed, original amount owed, current balance, terms, interest rate, annual installment, due date, required reserve accounts.			
Short-Lived Asset Replacement schedule; to include 1-15 year items, broken out as 1-5 year, 5-10 year, and 10-15 year life cycle.			

Condition of Existing Facilities - Water Projects

All Preliminary Engineering Reports for Water projects must contain the following:	**Completed**	**N/A**	**Page Referenced**
The Number and type of maintenance and repairs undertaken, backlogged, and/or forecast to keep the present facilities operating at required capacity.			
Treatment – Evaluate existing condition and effectiveness of treatment system.			
Distribution –If improvements are recommended to the distribution system, evaluate the condition of the existing system - a hydraulic model may be required – See Hydraulic Model requirements in this attachment. Verify all services are metered, if not metered must be included as cost in the PER to install meters.			
Pump Stations – Evaluate the condition of pump station(s). Specifically evaluate the existing condition of the electrical, mechanical and control systems. In addition, analyze existing head and flow conditions against pump curve. (*Intended to be a rough survey to determine if further investigation is required.)*			
Evaluate system vulnerability to power outages and make recommendations concerning back-up power.			
If water usage exceeds 200 gdppc, provide rationale for high water usage.			
Provide one page schematic of supply, pumping, and storage system complete with pumping elevations and rates, well head elevations, and storage capacities and elevations.			
Include map showing boundary lines, proposed system improvements, existing system, wells, and tanks locations. Include crossings of major roads, highways, watercourses, railroads, etc.			

Water Supply

All Preliminary Engineering Reports for Water projects must contain the following:	**Completed**	**N/A**	**Page Referenced**
Detail all changes which may impact water rights. If additional water rights are required, provide detailed discussion of alternative sources of supply. In addition, for additional water rights, a contract must be secured from the Owner of those water rights defining the terms under which those water rights may be purchased. (Note that contracts must have option to execute for at least two years)			
A narrative concerning the water supply quality must be included.			

All Preliminary Engineering Reports for Water projects must contain the following:	
Water Source Type – circle applicable or add if not listed Í Purchase Contract Í Off-Stream Reservoir Í Wells Í Lake Intake Í Spring Í River Intake	

Reservoirs and Storage Tanks

All Preliminary Engineering Reports for Water projects must contain the following information when new reservoirs/tanks are proposed; or when tank/reservoir renovation or modification is proposed.	**Completed**	**N/A**	**Page Referenced**
Provide sizing analysis based on combined volume of operating, emergency reserve, and fire suppression storage.			
Statutory deficiencies must be based on NAC 445A.6674* for existing water systems if the public water system has operated for more than 5 years.			
If tank coating or replacement recommended, please provide inspection report complete with photographs.			
If new storage tank location is being proposed, provide a title search assessment of the property ownership of the proposed site.			

Transmission and Distribution

PER's which recommend changes/expansions/improvements to the transmission/distribution must include the following:	**Completed**	**N/A**	**Page Referenced**
System Analysis documenting the availability of adequate source and storage to serve the proposed service. Include an hydraulic analysis for the proposed project if greater than 6"diameter looped system, or 8"straight pipe. See Hydraulic Model requirements attached.			
Provide water distribution map showing location of water lines, pipe sizes, type of pipe, pressure zones.			
Number of miles of transmission, distribution lines in system			
Water Distribution Type – circle applicable or add if not listed Í Full Fire Flow Í Partial Fire Flow			

¡ **Water Distribution Type – circle applicable or add if not listed** Demand Flow Only ¡ Average Flow ¡ Cluster ¡ Individual	

Water Treatment Systems

PER's which recommend changes/expansions/improvements to Water Treatment Systems must include the following:	**Completed**	**N/A**	**Page Referenced**
Include back-up documentation from State BSDW, NDEP, Discharge Permits, Water Quality Reports, etc.			
Include O & M costs for waste handling and waste disposal costs.			

Water Treatment Type –circle applicable or add if not listed

¡ Aeration	¡ Clarification
¡ Filtration	¡ Taste/Order Control
¡ Softening	¡ Trace Organics
¡ Removal of Inorganics	¡ Electro dialysis
¡ Coagulation	¡ Disinfection
¡ Iron/Manganese	¡ Reverse Osmosis

Hydraulic Water Modeling Requirements

If proposed pipe is larger than 6" diameter for a looped system, or 8" diameter for a straight pipe then include the following:	**Completed**	**N/A**	**Page Referenced**
Provide Calibrated Hydraulic Water Model per table below. The calibrated model shall then be utilized to model the proposed improvements and all pressure zones impacted by proposed improvements.			

Minimum Criteria for Planning Level Hydraulic Network Modeling

Type of Time Simulation	Number of Pressure Readings	Accuracy of Pressure Readings	Number of Flow Readings	Accuracy of Flow Readings
Steady-State or EPS	10% of Nodes on Larger Diameter Pipes	+/- 5 Psi for 100% of Readings	1% of Pipes	+/- 10%

Condition of Existing Facilities (Wastewater Projects)

All Preliminary Engineering Reports for Wastewater projects must contain the following.	**Completed**	**N/A**	**Page Referenced**
The Number and type of maintenance and repairs undertaken, backlogged, and/or forecast to keep the present facilities operating at required capacity.			
Circuit Rider reports must be included when referenced in PER.			
Provide one page schematic of pumping and treatment complete with pumping elevations and rates, discharge elevations, and plant inflow elevations, and existing pipe slopes and elevations.			
Include map showing boundary lines, proposed system improvements. Existing system, treatment plant, manholes and crossings (per water).			

Wastewater Collection Improvements

All Preliminary Engineering Reports for Wastewater projects must contain the following.	**Completed**	**N/A**	**Page Referenced**
Provide detailed hydraulic calculations for sewer lines in excess of 8" in Diameter.			
Investigate slip lining and other trenchless pipe renovation technology as alternative.			
Number of miles of lines in system			
Wastewater Collection Type – circle applicable or add if not listed ¡ Conventional Gravity ¡ Effluent Pumps ¡ Small Diameter Gravity ¡ Vacuum ¡ Hauling			

Wastewater Treatment/Disposal

All Preliminary Engineering Reports for Wastewater projects must contain the following, if improvements to the wastewater treatment/disposal are recommended:	**Completed**	**N/A**	**Page Referenced**
Provide back-up documentation from BWPC, NSDW, NDEP, or State Engineer (SDWA, CWA, Discharge Permits/violations, Test Well			
Monitoring Reports, Water Quality Reports.			
Analyze Infiltration and Inflow.			
Address agricultural and other reuse, and constructed wetlands where applicable.			

Wastewater Treatment Type – circle applicable or add if not listed

Flow Equalization	Aerated Lagoons	Sedimentation
Trickling Filters	Anaerobic Lagoons	Rotating Biological Contractors
Packed Bed Reactors	Activated Sludge	Stabilization Ponds
Micro screening	Nitrogen Removal	Phosphorus Removal
Chlorination	Disinfection with Ozone	Dechlorination
Septic Tanks	Ultraviolet	Oxidation Ditch

Wastewater Discharge Type – circle applicable or add if not listed

Surface Irrigation	Overland Flow	Rapid Infiltration
Natural Wetlands	Constructed Wetlands	Drainfields
Controlled Discharged	Stream	Spray Irrigation
Lake	Ocean Outlet	Deep Well Injection